

What is claimed is:

1. A thin film magnetic head comprising: a first magnetic layer having a pole portion opposite to a magnetic record medium, a second magnetic layer opposite to the magnetic record medium and having a pole portion with a width defining a width of a record track, for constructing an air bearing surface together with an end face of the pole portion and an end face of the pole portion of the first magnetic layer, a third magnetic layer contacted to the second magnetic layer at the side opposite to the first magnetic layer and magnetically coupled to the first magnetic layer at a rear position separated from the air bearing surface, a gap layer consisting of non-magnetic substance inserted between the pole portion of the first magnetic layer and the pole portion of the second magnetic layer, a thin film coil having a portion supported between the first magnetic layer and the second and third magnetic layers in the state isolated by an insulating layer, and a base substance for supporting the first, second and third magnetic layers, the gap layer, the insulating layer and the thin film coil, characterized in that the second magnetic layer is extended to the region after than the pole portion of the first magnetic layer along a part of the face at the side opposite to the first magnetic layer, of the insulating layer supported in the state isolating the thin film coil, thereby touching the second magnetic layer to the third magnetic layer at the extended region.
2. A thin film magnetic head as claimed in claim 1, wherein the width of second magnetic layer is widened at the region rear the pole portion.
3. A thin film magnetic head as claimed in claim 2, wherein the widened angle of the second magnetic layer at the region rear than the pole portion is 40~180 °.
4. A thin film magnetic head as claimed in claim 1, wherein the length h of the second magnetic layer, of the part rear from the pole portion is

5. A thin film magnetic head as claimed in claim 1, wherein the second magnetic layer consists of substance having a high saturation flux density.

6. A thin film magnetic head as claimed in claim 1, wherein the tip portion of the second magnetic layer is made backed up from the air bearing surface, so as not to expose the touched portion of the third magnetic layer and the second magnetic layer on the air bearing surface.

7. A thin film magnetic head as claimed in claim 6, wherein the distance backed up from the air bearing surface is made substantially equal to a throat height.

8. A thin film magnetic head as claimed in claim 1, wherein the insulation layer where the end edge of the magnetic pole section side becomes a reference position to the air bearing surface is provided on the above first magnetic layer, the surface of this insulation layer is covered with the gap layer consisting of the above non-magnetic material, and the above second magnetic layer is arranged along the surface opposite to the above insulation layer of this gap layer the above second magnetic layer.

9. A thin film magnetic head as claimed in claim 1, wherein the pole portion of the first magnetic layer is a trim structure.

10. A thin film magnetic head as claimed in any one of claims 1 to 9, wherein a magnetoresistive reading reproducing element insulated in electrically and shielded in magnetically is arranged so as to expose its end face on the above air bearing surface between the above basic substance and the first magnetic layer to construct a composite thin film magnetic head.

11. A method of manufacturing a thin film magnetic head comprising:  
step of forming a first magnetic layer having a magnetic pole section so as to  
support it by a basic substance, a step of forming a first insulating layer having

an end edge of the magnetic pole section side as a reference position for the air bearing surface, a step of forming a gap layer consisting of non-magnetic material on the magnetic pole portion in the above first magnetic layer and the above first insulation layer, a step of forming a second magnetic layer over the magnetic pole portion in the above first magnetic layer and the rear region therefrom on the gap layer, a step of forming a thin film coil supported in the state isolated with each other by the second insulation layer above the first insulating layer, a step of forming on the above second insulation layer a third magnetic layer coming in contact with the above second magnetic layer at the region rear rather than at least the magnetic pole portion, and coming in contact with the above first magnetic layer at a rear position away from the above air bearing surface, and a step of forming an air bearing surface opposed to the magnetic record medium by grinding the above basic substance, the magnetic pole portion of the first and second magnetic layers and the gap layer placed therebetween.

12. A method of manufacturing a thin film magnetic head as claimed in claim 11, wherein in case of forming the above second magnetic layer on the above gap layer, the width of a magnetic layer in a rear region is gradually expanded than the magnetic pole portion.

13. A method of manufacturing a thin film magnetic head as claimed in claim 11, wherein after forming the above second magnetic layer, the third insulation layer is formed to cover this second magnetic layer and the above gap layer, the surface of a rear region than the magnetic pole portion in the above second magnetic layer is exposed by grinding this third insulation layer, thereby forming a plane surface together with the third insulation layer, and the above thin film coil is formed on this plane surface.

14. A method of manufacturing a thin film magnetic head as claimed in claim 13, wherein the grinding process in the above third insulation layer is

15. A method of manufacturing a thin film magnetic head as claimed in claim 11, wherein after forming the above second magnetic layer, the above first magnetic layer is removed over a part of its film thickness to form a trim structure, by performing an etching treatment with the use of its magnetic pole portion as a mask.

17. A method of manufacturing a thin film magnetic head as claimed in claim 16, wherein the first shield layer for performing a magnetic shielding on the above basic substance, the magnetic resistance material film is formed thereon while being embed in a fourth insulation layer, after which the above first magnetic layer also serving as the second shield layer is formed, and in the grinding step for forming the above air bearing surface, the above first shield layer is ground and the above magnetic resistance material film is ground, thereby forming a magnetoresistive reproducing element which exposes its end surface on the air bearing surface.

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insulating layer, a step of forming a thin film coil in the state isolated with each other by the second insulation layer above the first insulating layer, a step of forming on the above second insulation layer a third magnetic layer coming in contact with the above second magnetic layer at the region rear rather than at least the magnetic pole portion, and coming in contact with the above first magnetic layer at a rear position away from the above air bearing surface, a step of forming an air bearing surface opposed to the magnetic record medium by grinding the above basic substance, the magnetic pole portion of the first and second magnetic layers and the gap layer placed therebetween.

19. A method of manufacturing a thin film magnetic head as claimed in claim 18, wherein in case of forming the above second magnetic layer on the above gap layer, the width of a magnetic layer in a rear region is gradually expanded than the magnetic pole portion.

20. A method of manufacturing a thin film magnetic head as claimed in claim 18, wherein after forming the above second magnetic layer, the gap layer around the above magnetic pole portion is removed over a part of its film thickness to form a trim structure, by performing an etching treatment with the use of its magnetic pole portion as a mask.

21. A method of manufacturing a thin film magnetic head as claimed in ~~any one of claims 18 to 20~~, wherein a magnetoresistive reading reproducing element insulated in electrically and shielded in magnetically is arranged between the above basic substance and the first magnetic layer to construct a composite thin film magnetic head.

22. A method of manufacturing a thin film magnetic head as claimed in claim 21, wherein the first shield layer for performing a magnetic shielding on the above basic substance, the magnetic resistance material film is formed thereon while being embed in a fourth insulation layer, after which the above first magnetic layer also serving as the second shield layer is formed, and in

the grinding step for forming the above air bearing surface, the above first shield layer is ground and the above magnetic resistance material film is ground, thereby forming a magnetoresistive reproducing element which exposes its end surface on the air bearing surface.

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